Abstract

Title: Monitoring of the quality of body posture and of the relation between body posture and physical fitness at young school-age children

Objective: The main goal of the work is to determine the quality of body posture and to find out the relation between posture and individual components of physical fitness and between posture and leisure time regime at a selected group of children of young school-age children

Methods: The research group consisted of 147 children, 77 boys and 70 girls from 1st to 3rd grades aged 6.3 to 9.7 years. To evaluation of posture has been performed by the Matthias test, which has been modified tor the purpose of this thesis. This modified test was verified in a pilot study. The assessment of physical fitness was based on a UNIFITTEST 6-60 test battery, also the values of somatic features were measured. The test battery was supplemented by a test of maximum reach while sitting bended. To determine the volume of physical activities, a questionnaire was used, resp. the survey, which was completed by parents, due to the age of the children. To evaluate the date, statistical methods have been used for evaluating differences (the-test, Mann-Whitney test, Kruskal-Wallis test) and to analyse the depency of variables a Spearman's rank correlation coefficient was used. The effect size was measured as well.

Results: In total 54.7% of children of the monitored group had poor body posture. Based on the t-test, there was found a statistically significant difference with middle effect size in the evaluation of the quality of body posture was found between the groups of boys and girls ($t = 3.21$; $p < 0.01$; $d = 0.53$). In general, boys scored worse in the body posture test. The incidence of a poor posture is 63.7% at boys, and 44.3% at a group of girls. A slight positive relationship between age and posture has been discovered (older children had worse posture) ($r_s = 0.140$, $p < 0.05$), in fact this found relationship was without size effect ($r_s^2 = 0.02$). Only a feeble correlation, without effect size, between the quality of the body posture and the amount of organized physical activity was measured in the group of girls ($r_s = -0.24$; $p < 0.05$) – girls with a higher volume of extracurricular physical activities had better results in the evaluation of posture; however, this effect was small ($r_s^2 = 0.03$).

The study has not shown any relations between the body posture and the individual components of physical fitness. The quality of the body posture is neither related to the amount of subcutaneous fat nor the BMI. The results of tests of fitness in both groups of girls and boys are even, the only statistically significant difference between these groups was found in the test result of the maximum reach while sitting, boys scored worse in this test.

We found relations between the volume of physical activity, fitness components and the amount of subcutaneous fat; statistically significant relations with size effect, were found between organized physical activity, the amount of subcutaneous fat and the results of running at 1000m (relationship between physical activity and results of running at 1000m: $r_s = -0.34$; $p < 0.01$; $r_s^2 = 0.12$); the relationship between the amount of subcutaneous fat and running results per 1000 m: $r_s = -0.39$; $p < 0.01$; $r_s^2 = 0.15$). A modified method of assessing posture according to Matthias proved to be a suitable tool for posture assessment.

Conclusion: More than half of the children of young school-age in the observed group children had poor body posture or at leas some posturela deviation, the boys had a worse posture than the girls. The results of our research did not show a relationship between posture and performance in physical fitness tests. There was no evidence of a relation between body posture and body composition (measured by amount of subcutaneous fat and BMI). There was a slight tendency for poorer posture in connection with older age. Children who practice an orgnized activity more often have a smaller amount of the body sbucutaneous fat and score better in physical fitness tests.

Sufficient physical activity probably has a positive effect on increasing fitness, but the relationship to posture is inconclusive. What is alarming is the number of children wiht poor body posture. This fact should be a strong impetus for adequate care and attention. Compensatory activities, specific exercises dealing with body posture and observations of deviations in posture should be the priority. It would be appropriate to include assessment of posture in the evaluation of health-oriented fitness.

Keywords: posture, fitness, physical activity, younger school age, Matthias´test